

*Untreated Syphilis in the Male Negro***Environmental Factors in the Tuskegee  
Study of Untreated Syphilis**

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THE PURPOSE of this report is to make a study of the background of the syphilitic and nonsyphilitic individuals who comprise the group considered in the study of untreated syphilis in the male Negro which has been in process in Macon County, Ala., since 1932 (1-9). This is familiarly referred to as the Tuskegee study.

Differences in morbidity and mortality rates have been observed in the untreated syphilitic and in the nonsyphilitic groups. It thus becomes important to determine whether factors other than presence or absence of syphilis may be operative.

Original selection of the two groups from this community to be included in the study was made on the basis of medical criteria which were related only to the presence or absence of certain specified physical and laboratory findings and personal history. The individuals making up the entire study group were selected from the positive and negative reactors found in programs of mass, communitywide serologic testing carried out in the area as part of a syphilis control program of the Public Health Service.

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The techniques utilized for selecting the persons to be tested were such as were thought to be equally applicable to all of the Negro members of the community without regard to their status, health or otherwise, in the community. At that time the community could be characterized as "poor." It was assumed that the only difference between the individuals selected to make the syphilitic and nonsyphilitic groups was simply the presence or absence of syphilis. This premise was stated by those who set up the study in 1932. The methods of case finding and study have as far as possible been comparable and nonselective.

However, it has been found that there are socioeconomic differences in prevalence of syphilis and that there is a relationship between socioeconomic status and morbidity and mortality.

**Syphilis Control in the Study**

In 1930, the Julius Rosenwald Fund (10), in cooperation with the Public Health Service and State and local health authorities, conducted demonstrations of control of venereal disease in six rural counties in Alabama. Macon County, one of the counties included in this demonstration study, revealed the highest percentage of positive reactors. Macon County had a Negro population of 22,320. Of these, 3,684 received serologic tests for syphilis and, of this number, 1,466 had positive reactions (table 1). Of these reactors, 1,400 were treated; only 33 gave a history of some previous treat-

**Table 1. Results of blood test surveys of Negroes in Macon County, Ala., from which study patients were selected**

Survey	Group tested		Total tested	Results of serologic tests for syphilis			
	Sex	Age (years)		Positive		Negative	
				Number	Percent	Number	Percent
Julius Rosenwald Fund, et al. (1930)	Both sexes----	All ages-----	3,684	1,466	39.8	2,218	60.2
United States Public Health Service (1932) <sup>1</sup>	Both sexes----	Over 18-----	4,400	990	22.5	3,410	77.5
	Males-----	25 and over---	1,782	472	26.5	1,258	70.6

<sup>1</sup> From this last group, the original study patients were selected, including 399 having untreated syphilis with at least two seropositive reactions, and 201 nonsyphilitic subjects with at least two seronegative reactions.

\* 52 (2.9 percent) unaccounted for—no data.

ment. Dr. Thomas Parran (11) described this county as "typifying an area of saturation with syphilis." In 1932, the Public Health Service, independent of the support of the Rosenwald Fund, started another survey in Macon County, and 4,400 Negroes, male and female, over the age of 18 years, were given tests for syphilis. From these were selected the group of patients who formed the basis of the study of untreated syphilis in the male Negro.

This present analysis of the environmental factors in the Tuskegee group is based upon study of a community which is well known both to sociologists and the Public Health Service. The members of the community know the research workers and the Public Health Service.

At the time of their selection in 1932, all the men in the study were living in or proximal to Macon County, which is 605 square miles in area and located in eastern Alabama about 40 miles east of Montgomery, the State capital. In 1932, the county was essentially agricultural, with a

moderate-sized lumber industry second in importance. Its population was approximately 88 percent rural.

Macon County lies within Alabama's famous Black Belt (so known because of its rich black soil), which in former years had held Alabama in a leading position among the southern States in cotton production and export. In 1932, although cotton remained the principal agricultural crop, it was not as profitable as in previous years because of the depletion of the soil through one-crop cultivation and because of the national economic depression which affected the area severely at that time.

Formerly, many slaves had been held in Macon County to cultivate the cotton. In 1840 there were 5,369 whites and 5,878 Negroes. In the next 20 years the whites added 3,000 to their number, but the Negro slaves increased by 13,000 (table 2). After the Civil War, the large slave-holding plantations were gradually broken up into smaller tracts, and the county

**Table 2. Trend of population distribution by race in Macon County, Ala., 1840-1950**

Year	Total population		Negro		White	
	Number	Percent	Number	Percent	Number	Percent
1840	11,247	100	5,878	52.3	5,369	47.7
1860	27,247	100	18,878	69.3	8,369	30.7
1930	27,103	100	22,320	82.4	4,783	17.6
1950	57,000	100	26,000	45.6	31,000	54.4

SOURCE OF POPULATION DATA: 1840 and 1860, Shadow of the Plantation (12); 1930 and 1950, Bureau of the Census population releases.

became cultivated for the most part by tenant farmers. By 1930 small farms were operated by more than 3,000 Negroes, the majority of whom were handicapped by low income, low living standards, and lack of educational opportunities. Many were waging a losing battle against economic adversity on submarginal land. Their farms represented their only source of income (12). The men selected for study came from this low-income group.

Coincidentally with the inception of this work with patients having untreated syphilis, another sociologic study was launched in Macon County by the Julius Rosenwald Fund. During this study 612 Negro families in the county were interviewed, and the findings were presented in Johnson's *Shadow of the Plantation* (12). In this book, life in a rural Negro community under the influence of a plantation economy is vividly portrayed, furnishing valuable source material for study of the Negro in the area during this period. From his observations, Dr. Johnson concludes: "The community studied reflects a static economy not unlike the Mexico hacienda, or the conditions of the Polish peasant, a situation in which the members of a group are 'muffled with a vast apathy.' . . . The situation is clearly one of isolation and cultural lag. The plantation communities in which Negroes live, insofar as they are areas of highest population concentration of this group, are also likely to be areas of greatest cultural isolation."

In the beginning of this study of patients with untreated syphilis, it was assumed that the group would remain in the same geographic area. Most of the study subjects were farmers and all were 25 years of age or over. They were predominantly men with families who had acquired responsibilities and had become well integrated into a community life and a folk culture which respond to change very slowly. Geographic isolation was a factor in favoring the unchanging nature of the group. In 1932, there were only 67 miles of paved highway in Macon County, most of which was U. S. Highway 80, which runs directly through the county. There were numerous unimproved roads which were impassable much of the time. The low income of most families permitted no means of transportation other than horses and mules,

which were used in cultivation of their farms.

At the time of this report, only 66 of the known 331 living patients in the study had moved out of the county. More than half of these were concentrated in the three northern cities of Chicago, Cleveland, and Detroit. Many of these men return to the county for vacations and family visits; probably some eventually will return to end their days at their old rural homesteads. It is worth noting that the average age of the mobile group that has been traced clearly is younger (49 years) than the average age of the stable Macon County group (61 years). No significance can be attached to the fact that a larger number of syphilitic patients have moved out of the county (44 syphilitic patients versus 22 nonsyphilitic controls) because this reflects the original ratio of the study. In general, we feel that the stability of this group for a long-range medical study has been remarkable.

#### Medical Facilities

In 1932, there were 1 Negro and 9 white physicians in private practice in Macon County. These physicians were fairly well distributed over the central and northeastern portions of the county, where the concentration of white population was greatest. None of the physicians was readily accessible to the Negroes concentrated in the southern and southwestern sections of the county. There were 4 dentists practicing in Tuskegee, the county seat.

The John A. Andrew Memorial Hospital, an outgrowth of the student infirmary, was established on the campus of Tuskegee Institute in 1912. This hospital offers excellent medical care for the Negro population of the county, but the poorer rural Negro cannot readily afford such care. On the outskirts of Tuskegee is located a Veterans Administration Hospital for Negroes (2,300 beds) which is staffed entirely by members of that race. This facility, however, does not supply medical care for the non-veteran population.

The Macon County Health Department was organized in 1928. Since 1930, numerous projects have been carried on in the county through this agency under the auspices of the United States Public Health Service, the Julius

Rosenwald Fund, and the Alabama State Health Department. Financial assistance from the Rosenwald Fund and the Public Health Service has been helpful in expanding the maternal and child health and venereal disease control programs.

In general, it can be said of Macon County that, through the efforts of medical and public health workers in the county over the years (13), the same progress has been made in the control of malaria, malnutrition, typhoid fever, the dysenteries, and other parasitic and infectious diseases as has been made throughout the rural south. In this study, such public health progress would be reflected in greater longevity of both syphilitic patients and control groups. This fact is important when the results of this investigation are compared with the higher mortality figures of older studies in the medical literature.

On the other hand, medical progress has not been so great nor medical care so widespread among our patients in Macon County as to defeat the project as a study of untreated syphilis. Despite the present prevalent use of antibiotics, with their known antisiphilitic potency, the study group remains essentially untreated: After careful interviewing, it was found that 34 of 133 patients with syphilis had received injections or oral medication which might possibly have been penicillin; 11 of the 34 received more than five injections.

#### Socioeconomic Data

The assumption has been made, by inference, in all previous medical reports on this study (1-9) that the socioeconomic and health factors were so uniform in Macon County that mortality or morbidity rate difference between the control and syphilitic groups could be attributed solely to syphilis.

The importance of socioeconomic factors in the prevalence of venereal disease is well known, and the fact that lower income groups suffer from more frequent and more recurrent venereal infections has been well documented in the recent studies by Warner and associates (14) in Studytown, and by Bowdoin and co-workers (15) in Savannah, Ga. These studies would lead us to suspect that syphilitic patients,

in general, fall into a lower socioeconomic stratum of society than a similar, nonsyphilitic group. Also, it is well known that there are other diseases and health hazards which are more prevalent among the lower economic classes, namely, malnutrition, tuberculosis, poor hygiene, and crowded living conditions. In any comparative study of syphilitic and nonsyphilitic subjects, it would be expected, unless proved otherwise, that the nonsyphilitic group would possess certain significant health advantages over their colleagues besides being free from syphilis. The question arises, how much mortality and disability in the study patients can be attributed to syphilis alone, to syphilis primarily, or to syphilis incidentally? Therefore, by interviewing each patient during the recent survey, socioeconomic information was sought for the first time in this study to determine if the nonsyphilitic subjects had any advantages, other than freedom from syphilis, which would predispose them to longer, healthier lives.

During the annual survey of 1951-52, efforts were made to locate and examine as many of the men in the study as possible. Physical examinations were performed on 232 individuals in the study group in Tuskegee and, of this number, 220 (94.8 percent) were interviewed regarding socioeconomic status. The composition of the study population furnishing information on this phase of the study is presented in table 3.

Table 3. Results of the 1951-52 Tuskegee investigations (as of November 19, 1952)

Study population	Total	Syphilitic subjects	Nonsyphilitic subjects
Present composition of the study groups.....	600	408	192
Patients examined in Tuskegee <sup>1</sup> .....	232	139	93
Patients who refused examination.....	9	6	3
Patients interviewed for socioeconomic data <sup>2</sup> ....	220	133	87

<sup>1</sup> Socioeconomic data obtained from 43 patients who had moved out of the county were omitted from this report.

<sup>2</sup> Note that almost entire group of patients examined (94.8 percent) furnished socioeconomic data. The 12 patients were not included because of such factors as low I. Q., deafness, or poor cooperation.

**Table 4. Socioeconomic data obtained from interviews: comparison of family status of syphilitic and nonsyphilitic subjects**

Family status	Syphilitic subjects	Nonsyphilitic subjects
Total number of patients interviewed	133	87
Median age (years)	61	60
Marital status (percent):		
Married	80.5	83.9
Separated	9.0	6.9
Widowed	9.8	5.8
Single	.7	3.4
Number of children:		
Living, total	453	384
Dead, total	237	164
Average number of children per patient	5.2	6.3

### *Family Status*

It will be noted from the comparative data contained in table 4 that the syphilitic and nonsyphilitic groups interviewed are quite similar according to family status. No appreciable difference could be shown in the marital status of the two groups; in the syphilitic group, 80.5 percent of those interviewed were married, 18.8 percent either widowed or separated, and 0.7 percent single, as compared to 83.9 percent married, 12.7 percent widowed or separated, and 3.4 percent single among the nonsyphilitic subjects. The median age of those in the syphilitic group was 61 years as compared to 60 years for those in the nonsyphilitic group.

### *Community Activities*

Participation in community activities was determined by church or lodge membership. The church remains the center of social functions in the rural Negro community. Lodges are popular in Macon County in that they offer social attractions for their members, with monthly meetings and occasional special services at the church. A member in good standing pays dues and receives certain financial benefits in case of illness or death. The material presented in table 5 indicates that according to the above criteria the persons included in this study form a homogeneous social group. Approximately one-fourth of both the syphilitic and nonsyphilitic groups had no formal education; 61.7 percent of the syphilitic group and 52.8

percent of the nonsyphilitic group had 1 to 6 years of schooling, whereas 14.3 percent of the syphilitic and 18.4 percent of the nonsyphilitic groups completed 7 to 12 years. One member of each group completed 4 years of college training. Slightly more than 90 percent of each group reported regular church attendance and more than half of each group acknowledged lodge membership. In no instance could statistical significance be demonstrated in the measures of social status of the two study groups.

Work status, because it can be used as a composite measure of economic level and working ability, probably is one of the most satisfactory methods of comparing groups of persons in a study of this kind. It was found (table 6) that more than 80 percent of each group named farming as their occupation. In both groups 40 hours represented the median length of time worked per week. The fact that approximately one-fifth of each group were listed as retired or unemployed is not surprising when the advanced age of many of the study patients is taken into consideration.

Personal visits to the homes of the majority of the patients has led us to the observation that the homes of the controls do not differ materially from those of the syphilitic patients. Almost without exception the houses are sorely in need of repair, unscreened, and without modern conveniences. According to the 1940 census report, there were 5,205 farm dwelling units in

**Table 5. Socioeconomic data obtained from interviews: comparison of education and of church and lodge affiliations of syphilitic and nonsyphilitic subjects**

Education and church and lodge affiliations	Syphilitic subjects	Nonsyphilitic subjects
Total number of patients interviewed	133	87
Education (percent):		
No formal education	23.3	27.6
Grades 1-6	61.7	52.9
Grades 7-12	14.3	18.4
College graduate	.7	1.1
Church affiliation (percent):		
Regular attendance	91.0	92.0
Official church position	6.0	6.9
Nonmember	9.0	8.0
Member of lodge (percent)	56.4	66.7

**Table 6. Socioeconomic data obtained from interviews: comparison of occupations and work status of syphilitic and nonsyphilitic subjects**

Occupation and work status	Syphilitic subjects	Nonsyphilitic subjects
Total number of patients interviewed	133	87
Occupation (percent):		
Farmers (including retired farmers)	83.5	86.2
Other	16.5	13.8
Work status:		
Median hours worked per week	40	40
Retired or unemployed (percent)	18.8	21.8

Macon County and, of this number, 4,500 were in need of major repairs, had no running water, no electricity, and no toilet inside the structure.

#### *Economic Standing*

During the interviewing, questions regarding actual income were avoided because it was found that, in the hope of receiving financial aid, the patients often reported a much lower income than they actually received. Attempts were made to determine economic standing by questions pertaining to physical assets, such as acres of land and head of livestock owned. Since this method of questioning would be productive only among those actively engaged in farming, the comparisons in table 7 are limited to such persons, representing about two-thirds of the total questioned in each group. One-third of the farmers in each group owned their farms, the remainder either renting or sharecropping. Medians computed for acreage cultivation and livestock ownership showed that in both groups, syphilitic and nonsyphilitic, farmers cultivated about 30 acres of land and owned 1 or 2 mules and cows. The median farm hours worked per week was identical with the median hours worked by the entire groups.

#### **Diet**

Because of medical interest in the significance of diet in health and disease, attention was focused on the dietary habits and body weights of the men. Weight, height, and body habits were recorded. In comparing the

syphilitic patient with the nonsyphilitic subject on weight basis alone, it can be seen from table 8 that those in the nonsyphilitic group tend to weigh more than those in the syphilitic group. Due to the numbers of persons compared, that is, 126 syphilitic patients versus 84 nonsyphilitic, the small differences are not significant. In comparing these Alabama farmers with the general population for relative incidence of obesity, the tables prepared by the Metropolitan Life Insurance Company (16) have been used. Apparently obesity was less prevalent in the study patients than in the general population; the physiques usually seen after these men undressed for examination were lean and hard-muscled.

The clinical impression regarding obesity is supported when the prevalence of excess weight in males in comparable age groups is compared, as follows:

	Age group (years)	Obese (10 percent or more above ideal weight) (percent)
General population (10,000 unselected insurance examinees)	40-60	35
210 Negro male patients	45 and over	21

Dietary histories were taken at random among the patients, and no remarkable differences were observed. During the period when the examinations were being done, these men were relatively inactive on the farms, and were

**Table 7. Comparison of data on physical assets obtained from farmers among syphilitic and nonsyphilitic subjects**

Physical assets	Syphilitic subjects		Nonsyphilitic subjects	
	Number	Percent	Number	Percent
Total number of patients interviewed	133		87	
Number actively engaged in farming:				
Own farm	30	34.1	22	37.3
Rent farm	50	56.8	35	59.3
Sharecrop	8	9.1	2	3.4
Median acreage cultivation per farmer	30		32	
Median livestock ownership per farmer:				
Mules	1		2	
Cows	2		2	
Median hours worked per week	40		40	

Table 2. Prevalence of body weight<sup>1</sup> abnormalities among syphilitic and nonsyphilitic subjects

Weight status	Total		Syphilitic		Nonsyphilitic	
	Number	Percent	Number	Percent	Number	Percent
Underweight.....	61	29.1	40	31.8	21	25.0
Obesity <sup>2</sup> .....	45	21.4	25	19.8	20	23.8
Normal <sup>3</sup> .....	104	49.5	61	48.4	43	51.2
Total patients.....	210	100.0	126	100.0	84	100.0

<sup>1</sup> Standards used in determining weight abnormalities were those prepared by the Metropolitan Life Insurance Company (16).

<sup>2</sup> 10 percent or more above ideal weight.

<sup>3</sup> Including patients less than 10 percent above ideal weight.

eating two meals a day, one at midmorning and the other late in the afternoon. The main foods were fresh pork (usually eaten at both meals), cornbread, biscuits, collards, mustard greens, milk, and syrup. Heavy seasoning with salt, hot sauce (green and red peppers in vinegar), and mustard was the general rule. The same foods appeared with monotonous repetition. By observing the foods freely selected by the patients at the hospital cafeteria on the day of examination, it was apparent that these men like relatively few dishes. As a rule, they were interested only in meat (pork or chicken, never beef) and bread, and would select vegetables only upon the suggestion that they do so.

## Age

One of the problems which has caused concern in this study is that of uncertain reckoning of ages by these men. Inconsistent ages are given not only at each of the surveys, but, in some cases, on the same day to different interviewers. Experience gained in this study confirmed that of the sociologists who worked in Macon County in 1932 and reported in *Shadow of the Plantation* (12): "One of the difficulties encountered in dealing with this older population is the confusion about ages. The most common method of keeping reasonably accurate ages is through their 'white folks,' who made and kept this record for the Negroes. Those who lacked the continuing relationship with a single white family would have them set down the most likely age or date of birth in a Bible. If the 'white folks' died, or the Bible

was lost, their ages were also lost and this was counted as irrevocable, not to be troubled about further. After all, ages are needed only at rare intervals, when a census is taken or for the even less exacting requirements of an obituary and death certificate."

However, despite the nonchalant attitude of the patients toward calendars and time-reckoners, it cannot be denied that they are 20 years older today than they were at the onset of the study.

## Summary and Conclusions

Much progress has taken place in Macon County since this study began in 1932, but the economic standing and cultural isolation of most of the rural Negroes in this study have not changed remarkably. These farmers still live in the same shacks that they occupied 20 years ago, and still eke out an existence by the same crude methods of farming. The younger generation is different in that its members tend to migrate to higher wage-scale industrial centers.

For the men in this study medical care has not improved appreciably in the past 20 years. The men still rely on home remedies and old superstitions to cure their ills. Excellent medical facilities exist within the county, but either the cost makes such care prohibitive to this low-income group or the patients are unaware of their availability.

In this study, as evidenced by the interview data presented, the socioeconomic differences between persons having syphilis and persons who do not are slight; the advantageous dif-

ferences, when any can be found at all, are slightly in favor of the nonsyphilitic group. In the men studied, isolation and cultural and economic retardation have been so uniform that the outstanding differences between the group with untreated syphilis and the nonsyphilitic group is still the medical fact that some have syphilis and some have not.

#### REFERENCES

- (1) Vonderlehr, R. A., Clark, T., Wenger, O. C., and Heller, J. R., Jr.: Untreated syphilis in the male Negro. A comparative study of treated and untreated cases. *Ven. Dis. Inform.* 17: 260-265 (1936).
- (2) Keller, J. R., Jr., and Bruyere, P. T.: Untreated syphilis in the male Negro. II. Mortality during 12 years of observation. *J. Ven. Dis. Inform.* 27: 34-38 (1946).
- (3) Deibert, A. V., and Bruyere, M. C.: Untreated syphilis in the male Negro. III. Evidence of cardiovascular abnormalities and other forms of morbidity. *J. Ven. Dis. Inform.* 27: 301-314 (1946).
- (4) Pesare, P. J., Bauer, T. J., and Gleeson, G. A.: Untreated syphilis in the male Negro. Observation of abnormalities over 16 years. *Am. J. Syph., Gonorr. & Ven. Dis.* 34: 201-213 (1950).
- (5) Shafer, J. K., Usilton, L. J., and Gleeson, G. A.: Untreated syphilis in the male Negro. A prospective study of the effect on life expectancy. *Public Health Reports*, this issue, pp. 684-690, and the *Milbank Memorial Fund Quarterly*, July 1954.
- (6) Schuman, S. H., Olansky, S., Rivers, E., and Shafer, J. K.: Untreated syphilis in the male Negro. Background and current status of patients in the Tuskegee study. In preparation.
- (7) Olansky, S., Schuman, S. H., Rivers, E., and Shafer, J. K.: Untreated syphilis in the male Negro. Twenty years of clinical observation of untreated syphilis and presumably nonsyphilitic groups. In preparation.
- (8) Peters, J. J., Peers, J. H., Olansky, S., Cutler, J. C., and Gleeson, G. A.: Untreated syphilis in the male Negro. Pathologic findings in syphilitic and nonsyphilitic patients. To be published in the *American Journal of Syphilis, Gonorrhea, and Venereal Diseases*.
- (9) Rivers, E., Schuman, S. H., Simpson, L., and Olansky, S.: Twenty years of followup experience in a long-range medical study. *Pub. Health Rep.* 68: 391-395 (1953).
- (10) Clark, T.: The control of syphilis in southern rural areas. Chicago, Julius Rosenwald Fund, 1932.
- (11) Parran, T.: *Shadow on the land*. New York, N. Y. Reynal and Hitchcock, 1937.
- (12) Johnson, C.: *Shadow of the plantation*. Chicago, University of Chicago Press, 1941.
- (13) Winters, M.: A study of the development and organization of the Public Health Department of Macon County. [A thesis.] New Orleans, Tulane University, 1941.
- (14) Warner, W. L., Hill, M. C., Bowdoin, C. D., Rion, J. W., and McCall, B.: Syphilis prevalence and community structure. *J. Ven. Dis. Inform.* 32: 157-166 (1951).
- (15) Bowdoin, C. D., Henderson, C. A., Davis, W. T., Jr., Remein, Q. R., and Morse, J. W.: Socio-economic factors in syphilis prevalence, Savannah, Georgia. *J. Ven. Dis. Inform.* 30: 131-139 (1949).
- (16) A study of impairments found among 10,000 unselected examinees: II: Weight. *Proc. Life Extension Examiners* 1: 89-93 (July-August 1939).